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10/616,869	07/09/2003	Sandeep Gulati	18329-008001	1459

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EXAMINER	
SKIBINSKY, ANNA	

ART UNIT	PAPER NUMBER
1631	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/616,869	GULATI, SANDEEP	
	Examiner	Art Unit	
	Anna Skibinsky	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-63* is/are pending in the application.

4a) Of the above claim(s) *14,15 and 19-63* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Amendments to claims 1, 9, 12-18 are acknowledged. Claims 1-13 and 16-18 are under examination.

Claims 14, 15, and 19-63 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/5/07.

Claims

Claims 14, 15 should be listed as withdrawn. Claims 12, 13, 16, 17 which are listed as "original" should be listed as "amended". Claim 18 which is listed is "withdrawn" should be listed as amended.

It is noted that there are two claims numbered "35" but no claim "34" in the amendment filed 8/23/07. It is assumed that this is a typographical error. Accordingly, the first listed claim "35" will be treated as if it were claim "34" and the second listed claim "35" will be treated as claim 35. Both claims are withdrawn, as set forth above, and therefore the misnumbering does not interfere with clarity of the record as it pertains to examination. However, applicant is advised that future claim mis-numbering and improper status indentifiers may result in amendments being considered nonresponsive. Applicant is encouraged to carefully review future amendments for compliance with 37 CFR 1.121.

Double Patenting

The rejection of claims 1-3, 5, 7, 11, 12, and 18 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 6-11 of US Patent No. 7,047,136 is withdrawn in view of the terminal disclaimer filed 6/21/2007.

The rejection of claims 1, 2, 7, 11-13, and 18 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9, 12, 13, 17, 18, 19-22 of US Patent No. 6, 671,625 is withdrawn in view of the terminal disclaimer filed 6/21/2007.

The rejection of claims 1, 2, 7, 8, 11 and 12 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10-13, 16, 17, and 19-20 of US Patent No.6, 963,806 is withdrawn in view of the terminal disclaimer filed 6/21/2007.

Claim Rejections - 35 USC § 101

The rejection of claims 1-13 and 16-18 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, as being directed to system that embodies both a process and an apparatus is hereby withdrawn .

Claims 1-13 and 16-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-13 and 16-18 are drawn to a computer system comprising a processor for performing interferometric analysis to detect the presence of an event. The

processor according the claimed system carries out the application of algorithms and computations of performing active interferometeric analysis and processes an event and, therefore, involves the application of a judicial exception. Regarding inventions involving the application of a judicial exception, said application must be a practical application of the judicial exception that includes either a step of a physical transformation, or produces a useful, concrete, and tangible result (State Street Bank & Trust Co. v. Signature Financial Group Inc. CAFC 47 USPQ2d 1596 (1998), AT&T Corp. v. Excel Communications Inc. (CAFC 50 USPQ2d 1447 (1999)). In the instant claims, there is no step of physical transformation, thus the instant claims must recite a practical application; i.e. recite a useful, concrete, and tangible result. See MPEP 2106, in particular, Section IV, for an explanation of a concrete, tangible and useful result.

Claims 1-13 and 16-18 do not recite a tangible result. A tangible result requires that the claim must set forth a practical application to produce a real-world result. Examples of a "real-world result" include a physical transformation of matter, or a step of communicating the result in a TANGIBLE format to a user; e.g. by outputting or displaying the result of the method. Applicant is reminded that any amendment must be fully supported and enabled by the originally filed description.

As the claims do not recite a physical transformation of matter OR a concrete, tangible and useful result, they are not directed to statutory subject matter.

Response to Arguments

1. Applicant's arguments filed 6/11/2007 have been fully considered but they are not persuasive.

2. Applicants argue (Remarks, page 23, ¶ 3) that the instant claims now recite a structure which is a processor and therefore are statutory.

3. In response, the rejection of record is maintained because the processor is solely directed to carrying out a process which is non-statutory. The process of performing interferometeric analysis and processing an event of interest is non-statutory because there is neither a physical transformation or a concrete, tangible and useful result such as a real world result or an out put of data to a user. Therefore the processor which carries out this non-statutory process is also non-statutory.

Claim Rejections - 35 USC § 112-2nd paragraph

The rejection of claim(s) 1-13 and 16-18 under 35 USC § 112-2nd paragraph is withdrawn in view of Applicant's Remarks/Amendments filed 8/23/2007.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3-6 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Cabib et al. (US Patent No.5,539,517).

2. Cabib et al. teach an interferometer with a detector array that is two dimensional (Abstract, col. 4, lines 25-67). The intensity of the optical path difference (ODP) which induces the interference is computed (i.e. computationally induced) via set of equations (col. 10, lines 16-60), as in claims 1 and 5 (i.e. spacial 2-D array). Cabib et al. teaches the use of a signal processor (col. 4, lines 34-37 and Figure 2), as recited in claim 1. Furthermore, Cabib et al. teach decreasing the signal-to-noise ratio during a required time frame (i.e. event of interest) so therefore, the signal is processed differently than the noise, as required by claim 1 reciting processing the event of interest in a different way that other events within the arrayed signal pattern.

3. Cabib et al. teach both moving and non-moving interferometers are taught (col. 2, lines 7-32), as in claim 3 reciting either static or dynamic data.

4. Cabib et al. teach collecting optics (Figure 1 and col. 4, lines 49-54) from a platform shown in Figure 1 and optical plate made of light transmitting material (Figure 11, col. 4, lines 1-7), as in claim 6

5. Cabib et al. teach a modulating, periodic function, and a Jacquionot advantage, and that the device taught is capable of improving the signal-to-noise ratio by a factor and the square root of the ratio of the signal at a particular wavelength to the average signal in the spectral range (col. 2, line 65 to col. 3, line 13), which reads on the limitation of claims 8 and 9 reciting an expressor function which rejects any interfering noise and extracting spectral invariations (i.e. noise) of events of interests.

6. Cabib et al. teach that the radiation considered is through an optical phase difference (OPD), expressed in equation 1 (col. 6, lines 9-22) which recites the inverse of the wavelength of the radiation (i.e. frequency) where wavelength and wave numbers (col. 10, line 18) are a property of light, which reads on the limitation of claims 4 and 10 reciting an expressor function that is a quantum expressor function (claim 4) and comprising frequency domain sequences (claim 10).

Response to Arguments

4. Applicant's arguments filed 6/11/2007 have been fully considered but they are not persuasive.

5. Applicants argue (Remarks, page 24, ¶3) that Cabib et al. do not suggest or teach an "expressor function", per se.

6. In response, in the absence of a limiting definition for an expressor function in the instant application, this is interpreted to be a function that expresses, as in the mathematical functions that express the behavior of radiation and intensity in the interferogramic analysis as taught by Cabib et al. (col. 10, lines 16-60).

7. Furthermore, applicants argue (Remarks, page 25, ¶1) that the instant claims require a computationally induced interference mechanism while Cabib et al. teaches an optical interference between elements in the interferometer.

8. In response, the instant claims do not exclude the teaching of Cabib et al. because claim 1 recites "a processor that performs active interferometeric analysis". Cabib et al. teaches the use of a signal processor (col. 4, lines 34-37 and Figure 2).

Therefore, Cabib et al. teach a processor which meets the limitation of claim 1 that recites a processor that detects that presence of an event of interest.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabib et al. in view of Garini et al.

10. Cabib et al. teach an interferometer capable of performing moving and non-moving interferometric analysis on optical platforms and 2-D arrays using functions that expresses (i.e. an expressor function) signal to noise ratios, properties of radiation such

as frequency and wavelength (i.e. quantum expressor function), as required by claims 1, 3-6 and 8-10 stated in the rejection above.

11. Cabib also et al. teach an apparatus capable of analyzing light from a variety of sources (col. 5, lines 1-10) but do not specifically teach the apparatus applied to biological samples such as hybridized spotted cDNA microarrays of claim 7. However, Garini et al. teach interferometric analysis of in situ hybridizations (Abstract) of DNA (col. 12, lines 22-29 and Figure 12 (e)).

12. Cabib et al. further teach an apparatus capable of detecting resonant events (i.e. via Raman spectral imaging, col. 5, lines 1-10 and col. 12, lines 29-35), as in claim 18. However, Cabib et al. do not teach implementing the interferomentric analysis in software as set forth in claims 2, 11-13 and 16-18.

13. However, Garini et al. teach interferometric analysis using software (col. 2, lines 23-32), as in claims 4 and 11.

14. Furthermore, Garini et al. teach detection and analyzing in situ hybridization using interferomentric analysis including using a mathematical algorithm (col. 6, line 55 to col. 7, line 43), as in the detection and "quantitation analysis" of claim 12.

15. Garini et al. teach passing incident light through an interferometer and splitting the light beam into two coherent beams which combine to interfere (col. 7, lines 15-22; and Figure 3), which discloses a system capable of constructive interference as recited in claim 13.

16. Garini et al. teach algorithms that manipulate and compute the properties of wavelengths of the spectra, which read on the "software emulation of wave-wave interactions" in claim 16.

17. Garini et al. teach wavelength spectra in e.g., Figures 7(a) to (e), wherein the frequency domain is inverse the wavelength and thus reads on an apparatus capable of interferometric analysis which includes a frequency domain as recited in claim 17.

18. Garini et al. teach algorithms calculated by the apparatus which performs spectral image analysis (col. 19, line 7 to col. 20, line 55) on fluorescing cells wherein the apparatus is capable of measuring a complete spectrum and providing quantitative insight into the behavior of dye molecules as well as apply data analysis and classification algorithms such as multivariate analysis, principal component regression to spectrally related parameters can be analyzed (col. 22, lines 20-44), which reads on an apparatus capable of performing iterative convergence to detect resonance events, as recited in claim 19.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have used the interferometer as taught by Cabib et al. with the analysis software as taught by Garini et al. because Garini et al. teach that their invention is compatible with the interferometer of Cabib et al. (col. 11, lines 30-33; and col. 14, lines 27-51). One of skill in the art would have been motivated to use the software analysis of Garini et al. in combination with the interferometer of Cabib et al. because Garini et al teach that the imaging spectrometer of Cabib is "highly suitable" to implement the method of the invention of Garini (col. 14, lines 1-7). One would be

further motivated to combine the teachings of Garini et al. with that of Cabib et al. because Garini et al. teach that software and mathematical algorithms are necessary to analyze and display important results in a meaningful way (col. 2, lines 23-32).

Response to Arguments

9. Applicant's arguments filed 6/11/2007 have been fully considered but they are not persuasive.

10. Applicant's arguments (Remarks, page 12, ¶ 2-3) against the obviousness rejection of Cabib et al. in view of Garini et al. rely on the failure of the Cabib et al. reference to anticipate claim 1. As such, having rebutted the arguments against Cabib et al. as applied to claim 1 in the 102(b) rejection above, the arguments against are Cabib et al. in view of Garini et al. are rebutted as well.

Conclusion

1. No claims are allowed.

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Skibinsky whose telephone number is (571) 272-4373. The examiner can normally be reached on 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached on (571) 272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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10/29/07